SOUTH AFRICAN IRIDACEAE. A REVISION OF HEXAGLOTTIS

By G. J. Lewis

(*Compton Herbarium, Kirstenbosch*)

(With Plate XXII)

It seems remarkable that so small a genus as *Hexaglottis* should have been subject to much confusion, yet the three species named, described and figured in Europe and England during the eighteenth and early nineteenth centuries were so completely misunderstood by various botanists that a certain amount of confusion has persisted to this day. The three species involved occur on the Cape Peninsula and in my revision of the genus for Adamson and Salter's *Flora of the Cape Peninsula*, published in 1950, I separated them under their correct names but failed to mention one important detail, namely the presence of a perianth tube in *H. virgata.* In 1954 I referred to this omission in a paper, "Some Aspects of the Morphology, Phylogeny and Taxonomy of the South African Iridaceae" (Ann. S. A. Mus. xl, p. 93), and stated that a perianth tube in one of the species necessitated some amendment to the generic description.

The fourth species, *H. nana,* was not known until it was described by Dr. L. Bolus in 1932. As it is confined to the Clanwilliam Division and southern borders of the Van Rhynsdorp Division, it was not mentioned in the Peninsula Flora, and being quite distinct from the others it did not enter into the confusion which surrounded them. The following short account of the first three species described will give some idea of how the misunderstanding arose and of the need for a revision of the genus.

In 1776 Jacquin described and figured the first species, from plants cultivated in Europe, and named it *Ixia longifolia.* Five years later Linné f. described the second species, from plants collected at the Cape by Thunberg, which he named *Moraea flexuosa*, giving as a synonym *Ixia longifolia* Jacq. Since then most botanists have regarded the two species as being conspecific, some adopting the Linnaean specific epithet and others that of Jacquin.

Jacquin described the third species in 1789, again from plants cultivated in Europe, and gave a very good illustration of it in the second volume of his *Icones Plantarum Rariorum.* He commented on the fact that Linné had transferred his *Ixia longifolia* to *Moraea* with a different specific name, and although he expressed some doubt about the correctness of the procedure, since he maintained that according to the Linnaean System the presence of a perianth tube precluded its inclusion in the genus *Moraea,* he followed Linné f. in placing this species in *Moraea* and named it *Moraea virgata.*

The perianth tube of *M. virgata* was described by Jacquin as "infundibuliform", and it is evident both from this and his illustration of the flower that he took the very small cup formed by the suberect unguiculate portion of the lobes to be a continuation of the tube. The claws of the lobes in all species of *Hexaglottis* are connate for about 0·5 mm. at the base and free but more or less contiguous above, *H. virgata* being the only one which has a cylindrical tube 5—6 mm. long below the claws. It would appear, however, that Jacquin's reason for placing the first species he described in the genus *Ixia* and not *Moraea* is because he assumed that the very short erect cup in this species was a perianth tube. Lamarck, writing about *Moraea flexuosa* in his *Encyclopédie Methodique* in 1897 (Vol. iv, p. 277), appealed to botanists who had an opportunity of observing living plants to examine them with special attention to decide whether or not the flowers had a tube, since there had been some difference of opinion among botanists about this point on which it depended whether the plant should be placed as an *Ixia* or a *Moraea.*

Willdenow, Vahl and Roemer and Schultes all placed *Hexaglottis virgata* in the genus *Ixia,* yet for some reason the fact that this species has a perianth tube was overlooked by all later botanists. In 1869 an excellent illustration of this species was published in Saunders' *Refugium Botanicum* (Vol. 1, t. 24) as *Homeria flexuosa,* with a description by Baker, but although the perianth tube is shown above the ovary in one of the much enlarged figures (a copy of most of the figures from Saunders' plate is given in Fig. 3 of this paper), it was not mentioned by Baker in the description there, nor in his revision of *Hexaglottis* in the *Flora Capensis* in 1896 (Vol. vi, p. 31) where he did not cite the Saunders Ref. Bot. plate nor the name *Homeria flexuosa,* evidently having forgotten about it, and in the generic description described the perianth as "cut down to the ovary".

Ventenat established the genus *Hexaglottis* in 1808, with one species, *H. longifolia* (Jacq.) Vent. In 1830 Sweet placed two species in the genus, *H. flexuosa,* for which he gave us a synonym *Hexaglottis longifolia*

Vent., and *H. virgata*. Klatt, in 1866, united the three species of *Hexaglottis* with *Homeria spicata* Sweet, under that name. In the *Flora Capensis* Baker gave two species, *H. longifolia* and *H. virgata*, but it was

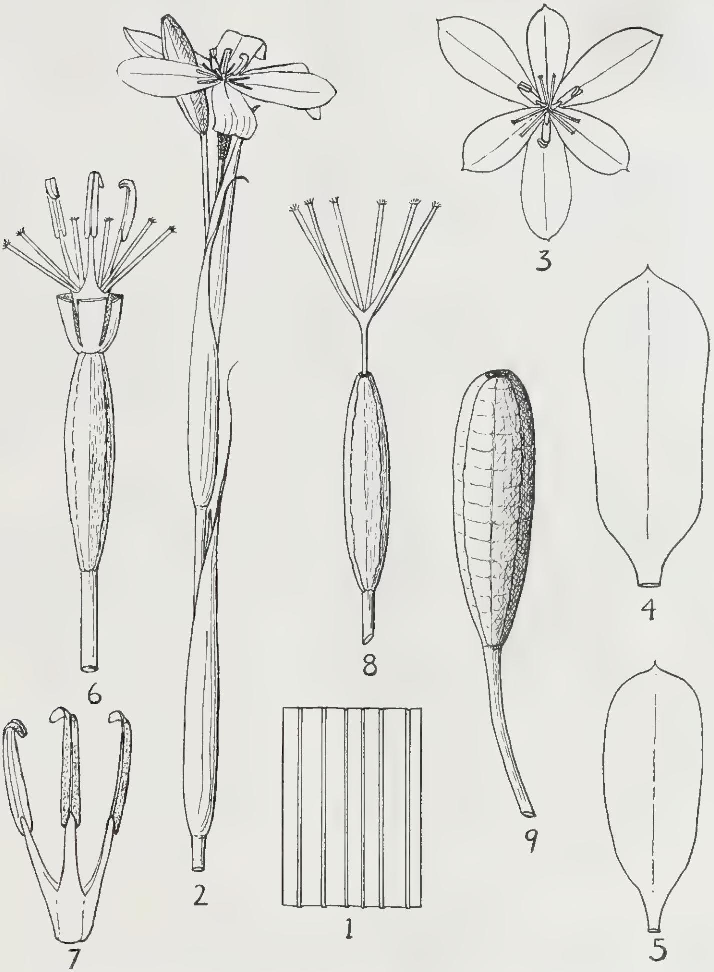

Fig. 1.—*H. longifolia*. 1. Portion of leaf, lower surface, × 1½. 2. Top of inflorescence showing the terminal and penultimate cymes. 3. Flower. 4. Outer perianth lobe × 2. 5. Inner perianth lobe × 2. 6. Side view of flower with blades of perianth lobes removed, × 3. 7. Androecium × 4. 8. Gynaecium × 3. 9. Capsule × 2. *Del.* G. J. Lewis.

pointed out by N. E. Brown in 1928 that the descriptions and specimens quoted by Baker apply to neither of those species (Journ. Linn. Soc. xlviii, p. 52—footnote). Levyns, in the *Guide to the Flora of the Cape Peninsula* (1929) gave only one species for this area, *H. longifolia*, and Phillips, in the second edition of the *Genera of South African Plants* (1951) gave the number of species as 3, and "perianth tube 0".

The number of species given here is four, with two varieties in two of them. It is very probable that a specimen in the Bolus Herbarium from Garcias Pass in the Riversdale Division (No. 11387, collected by Bolus) represents a new species but it is necessary to see living plants to draw up a description and come to any decision. On the label the flowers are described as "white and purple", and as far as can be seen in the dried state the perianth lobes are considerably wider than in any known species. The flowers of three of the known species are yellow, sometimes brownish or greenish on the outer surface, and in *H. nana* they are either pale yellow or pale salmon pink. They are delicate, fugacious, and open only in the afternoon, fading towards evening, and emerge successively from the spathes which are two to five-flowered. When not in flower the plants, with their slender reed-like stems and trailing grass-like leaves, are very difficult to discern among the surrounding grasses and other vegetation, so that collecting material of this genus is by no means easy.

The genus is endemic and as far as is known occurs only in the winter rainfall areas of the Cape of Good Hope, from Namaqualand to the Cape and eastwards as far as the Port Elizabeth Division.

A sheet of *H. virgata* in the National Herbarium, Pretoria (No. 7813, from Rawsonville, Worcester Division) bears a label of the Division of Veterinary Education and Research, Onderstepoort, marked "Suspected Poisonous", but apart from this little if any investigation appears to have been made into the toxic potential of the genus. Watt and Breyer-Brandwijk did not mention *Hexaglottis* in the *Medicinal and Poisonous Plants of Southern Africa* but of its two closely allied genera, *Moraea* and *Homeria*, they stated that all species should be regarded as toxic until the contrary is proved, and I am of the opinion that this should apply to *Hexaglottis* as well.

ACKNOWLEDGMENTS

In addition to living plants, material in collections in the following institutions has been examined:—

Bolus Herbarium, University of Cape Town	BOL
South African Museum Herbarium, National Botanic Gardens of South Africa	SAM

Compton Herbarium, National Botanic Gardens of South Africa	NBG
Conservatoire et Jardin Botanique, Geneva	G
Muséum National d'Histoire Naturelle, Laboratoire de Phanérogamie, Paris	P
Royal Botanic Gardens, Kew	K
National Herbarium, Pretoria	PRE
Botaniska Museet, Uppsala	UPS

To the Directors and Curators of these institutions thanks are due for facilities provided for examination of the specimens. In particular I have to thank the Directors and Curators of the Bolus Herbarium, the Royal Botanic Gardens, Kew, and the National Herbarium, Pretoria, for the loan of their material.

To Dr. C. G. Alm, Assistant Botanist (retired) of the Institute of Systematic Botany of the University of Uppsala, I wish to express my gratitude for photographs of four of Thunberg's sheets, one of which is reproduced here with his kind permission.

Hexaglottis

Vent. Decas Gen. Nov. 6 (1808); Benth. & Hook. f. Gen. Pl. 3: 692 (1883); Baker, Journ. Linn. Soc. 16: 99 (1877), Handbk. Irid. 75 (1892) and Fl. Cap. 6: 31 (1896); Dur. & Schinz Consp. Fl. Afr. 5: 159 (1895); Levyns Guide to Fl. Cap. Pen. 77 (1929); Diels in Engl. & Prantl Pflanzenfamilien ed. 2, 15: 496 (1930); Lewis in Adamson & Salter Fl. Cap. Pen. 225 (1950); Phillips Gen. S. Afr. Fl. Pl. ed. 2, 214 (1951).

Plantia Herb. in Edwards's Bot. Reg. 30: Misc. 89 (1844).

Name from the Greek *ex*, six, and *glottis*, a tongue, alluding to the six style branches.

The common name applied to *H. longifolia*, *H. flexuosa* and *H. virgata* is *Swartuintjie*.

Corm small, globose; tunics dark brown or blackish, coarse, lamellate, laciniate at the base, spinescent at the apex. *Stem* short or long, usually branched, the branches in one species very short. *Leaves* cauline, the lower 1—5 long, linear or linear-lanceolate, reflexed and patent, usually shortly amplexicaul at the base and above either flat, conduplicate or involute, sometimes appearing terete, prominently nerved or striate on the lower surface; upper 1—4 leaves short and spathe-like, acuminate the lower half usually amplexicaul. *Inflorescence* in one species fasciculate with terminal cymes on very short branches, in the others with many sessile lateral cymes on the axis and branches; cymes 2—5-flowered.

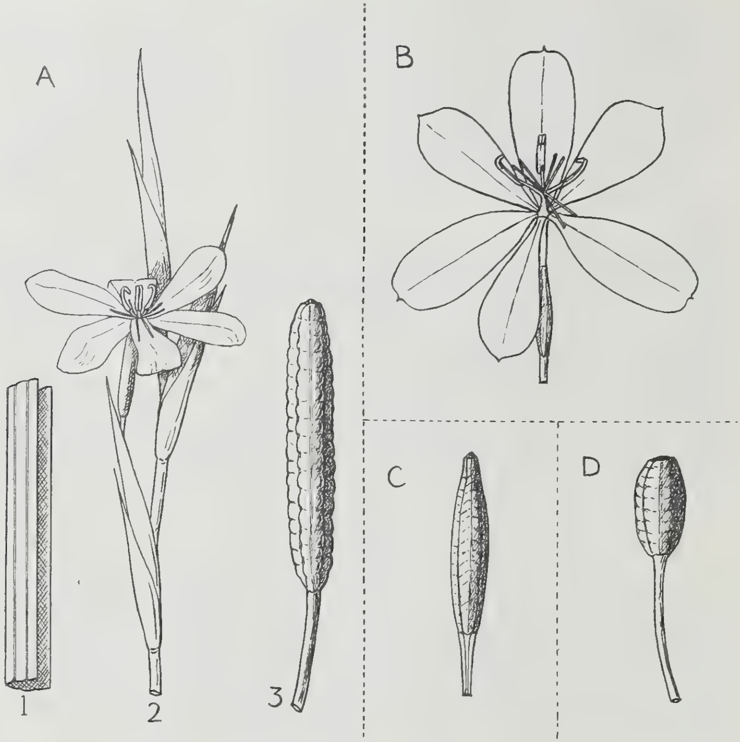

Fig. 2.—A. *H. flexuosa.* 1. Portion of leaf × 2. 2. Part of inflorescence. 3. Capsule, with part of pedicel, × 2. B. *H. virgata* var. *lata.* Flower laid out flat to show claws of perianth lobes and lower connate part of stamens. C. *H. virgata.* Capsule and pedicel × 2. D. *H. nana.* Capsule, with part of pedicel, × 2. Del. G. J. Lewis.

Spathes herbaceous, sometimes more or less dry and pallid at flowering time, the outer like the upper leaves, the inner similar, as long as the outer or slightly shorter or longer. *Flowers* pedicellate, fugacious and twisting up spirally in fading, usually yellow: *lobes* subequal, very shortly unguiculate with erect claws and oblong or obovate-oblong patent blades, one species with a short tube, the others with the claws connate at the extreme base. *Stamens* opposite the style branches; filaments as long as anthers or slightly shorter, the lower third connate in a tube; anthers linear-lanceolate, at first erect, later becoming circinate. *Ovary* cylindric or clavate-cylindric, in one species enclosed within the spathes, in others

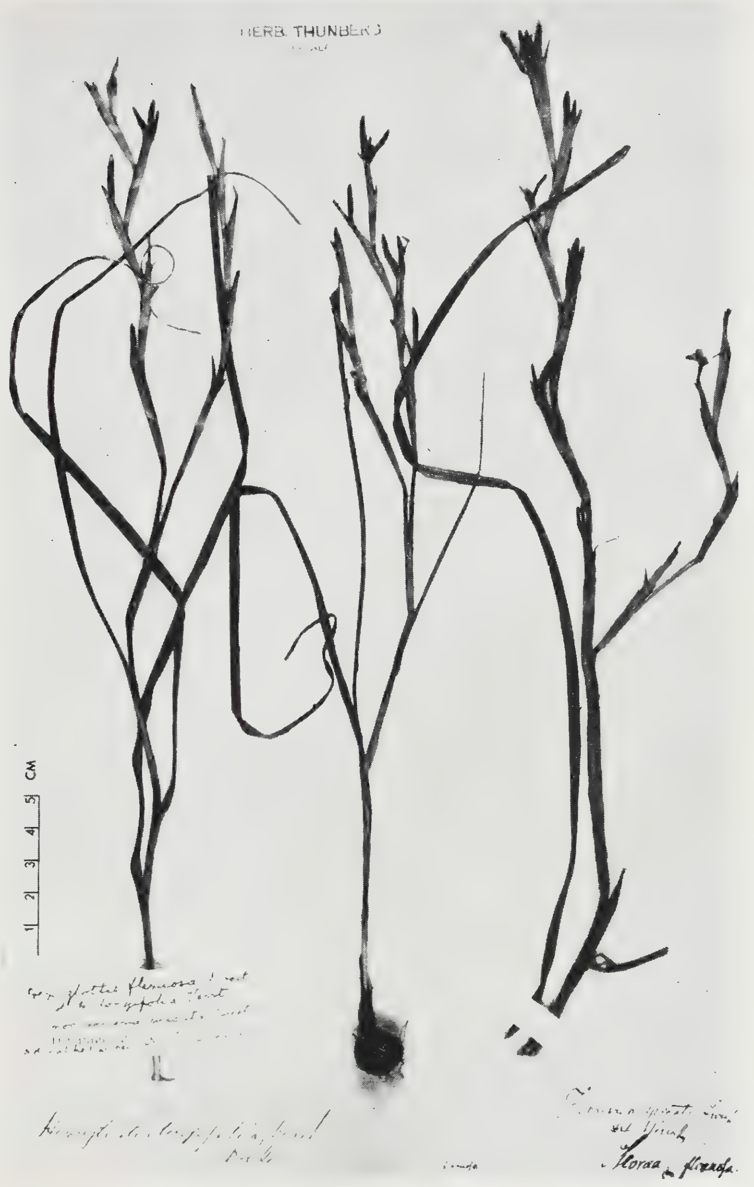

PLATE XXII.

The type sheet of *Hexaglottis flexuosa*, in Thunberg's Herbarium, Uppsala.
By courtesy of the Botanical Museum of the University of Uppsala.

more or less exserted; *style* short, the branches longer and forked into filiform segments minutely ciliate at the apex. *Capsule* cylindric, oblong or clavate-oblong, in one species enclosed in the spathes, in others exserted; *seeds* numerous, small, dark reddish brown, turgid and angular.

The type species is *H. longifolia* (Jacq.) Vent.

KEY TO THE SPECIES.

1. Inflorescence usually branched, with many sessile lateral cymes on the axis and branches.
  2. Flower with a perianth tube; ovary and capsule always enclosed within the spathes .. .. (3) *virgata*
  2. Flower without a perianth tube; ovary and capsule partly to well exserted from the spathes.
    3. Stem usually 60 cm. to 1 m. or more high, if less then simple; cymes fairly widely spaced, rarely slightly imbricated; inner spathes usually enclosed within the outer except in the terminal cyme; capsule oblong or clavate-oblong .. .. (1) *longifolia*
    3. Stem usually less than 60 cm. high, branched and often flexuose; cymes nearly always closely spaced and more or less imbricate; inner spathes slightly to well exserted from the outer in lateral and terminal cymes; capsule cylindric, sulcate .. .. (2) *flexuosa*

1. Inflorescence fasciculate with 2 to several very short branches each with a single terminal cyme .. .. (4) *nana*

1. **H. longifolia** (Jacq.) Vent. Dec. Gen. Nov. 6 (1808); Salisb., Trans. Hort. Soc. 1: 313 (1812); Baker, Journ. Linn. Soc. 16: 100 (1877), Handbk. Irid. 76 (1892) and Fl. Cap. 6: 32 (1896), pro parte; Dur. & Schinz Consp. Fl. Afr. 5: 159 (1895), pro parte; Lewis in Adamson & Salter Fl. Cap. Pen. 225 (1950). *Ixia longifolia* Jacq. Hort. Vind. 3: 47 & t. 90 (1776). *Moraea longifolia* Pers. Syn. 1: 49 (1805), pro parte. *Homeria spicata* Klatt, Linnaea 34: 626 (1866), pro parte.

Corm 1·5—2 cm. diam.; tunics brown or greyish. *Stem* 60 cm. to 2 m. high, 3—6 mm. diam. at the base, nearly straight and erect or somewhat cernuous towards the apex in tall plants, flexible, simple or with 1—3 fairly short erect flexible branches. *Leaves* several, the lower 3—5 linear-lanceolate, amplexicaul for 1·5—5 cm. at the base, flat above, 30 cm. to 1·5 m. long, 0·7—1·5 cm. (occasionally to 2 cm.) wide near the base, fairly prominently 5—8-veined on the lower surface; upper cauline leaves 5—9 cm. long, the lower half amplexicaul, the upper appressed to the stem, acuminate, with along sphacelate setaceous cusp. *Inflorescence* of several sessile lateral 4- or 5-flowered cymes, usually fairly widely spaced on the stem and branches, occasionally somewhat closer with the setaceous tip of the spathe reaching shortly above the base of the next spathe above. *Spathes* 5—9 cm. long, the inner as long as the outer or slightly shorter and often concealed in the lateral cymes but slightly longer and exserted in the terminal. *Flowers* scentless or with a faint unpleasant scent, yellow with a greenish medial line on the outer surface of the lobes; *lobes* very shortly unguiculate, the claws connate for about 0·5 mm., the blades oblong, obtuse or subacute, usually minutely apiculate, the outer 2—2·7 cm. long, 0·8—1·1 cm. wide, the inner 1·6—2·3 cm. long, 6—9 mm. wide. *Filaments* 5—6 mm. long, connate for 2—2·5 mm.; *anthers* 5—6 mm. long. *Pedicel* 4—4·8 cm. long. *Ovary* exserted from spathes, clavate-cylindrical, 1—1·2 cm. long; *style* 2—2·5 mm. long; style arms 5—6 mm. long. *Capsule* well exserted from spathes, oblong or clavate-oblong, 1·6—2·3 cm. long, 6—8 mm. diam.

Moist or shady places near streams on the Cape Peninsula from Orange Kloof to Newlands.

TYPE. Jacquin Hort. Vind. Vol. 3, t. 90.

Flowering period. October—November.

CAPE. Orange Kloof, by swamp, *Dod* 3479 (K, PRE); Kirstenbosch, in damp ground near stream, *Lewis* 673 (SAM, PRE); Kirstenbosch, near Pearson House, *Barker* 1965 (NBG); near Liesbeek River below Fernwood, *Salter* 8775 (SAM), 8973 (NBG), 8999 (BOL).

Without locality:—*Thunberg* (*Moraea flexuosa* sheet c in Herb. Thunb., specimen on left. UPS).

Var. **angustifolia** Lewis var. nov.

A var. *longifolia* foliis angustioribus, firmioribus et plerumque conduplicatis, spathis brevioribus et capsulis minoribus, distinguitur.

Folia linearia 3, circa 1 m. longa, basin versus 4—5 mm. lata, firma, prominenter nervata, plus minusve conduplicata. *Spathae* 2·5—5 cm. longae, aequales vel interior quam exterior leviter brevior vel longior. *Capsula* 0·8—1·5 cm. longa.

Differs from var. *longifolia* in having narrower, firmer and usually conduplicate leaves, shorter spathes and smaller capsules.

Leaves 3 linear, about 1 m. long, 4—5 mm. wide near the base, firm, prominently veined, more or less conduplicate. *Spathes* 2·5—5 cm. long, equal or the inner slightly shorter or longer than the outer, either concealed or shortly or up to half exserted. *Capsule* 0·8—1·5 cm. long.

TYPE. *Pillans* 8436 in the Bolus Herbarium.

CLANWILLIAM. Clanwilliam, moist grassy places on river bank, *Galpin* (BOL. s.n., PRE No. 11483).

PAARL. Du Toits Kloof, *Pillans* 8436 (BOL).

H. longifolia has generally been confused with *H. flexuosa* but the plants are usually much taller and stouter, with a straight flexible flowering stem, wider leaves and differently shaped capsules. The flowers of the two species are similar in appearance but those of *H. longifolia* have little or no scent and those of *H. flexuosa* a strong unpleasant scent. The habitat also is different, as far as is known *H. longifolia* occurring only in the vicinity of streams or marshy places, often in shade under trees. The flowers open between 2 and 2.30 p.m. and start to curl up at about 6 p.m.

2. **H. flexuosa** (L. f.) Sweet Hort. Brit. ed. 2, 498 (1830), excl. syn. *H. longifolia* Vent.; Lewis in Adamson & Salter Fl. Cap. Pen. 225 (1950). *Moraea flexuosa* L. f. Suppl. 100 (1781), excl. syn. *Ixia longifolia* Jacq.; Thunb. Diss. Moraea p. 10 (1784), Prodr. 11 (1794), Fl. Cap. 1: 272 (1811) and ed. Schult. 70 (1823); *Murray, Linn. Syst. Veg. ed. 14, 93 (1784); *Gmel. Syst. Veg. ed. 13, 117 (1791); *Willd. Sp. Pl. 1: 243 (1797); *Vahl Enum. 2: 156 (1806); *Roem. & Schult. Syst. 1: 453 (1817); *Ker in Curtis's Bot. Mag. 19, t. 695 (1803) and Gen. Irid. 33 (1827); (*all excl. syn. *Ixia longifolia* Jacq.); Eckl. Top. Verz. 15 (1827). *Sisyrinchium flexuosum* (L. f.) Spreng., Syst. Veg. 1: 167 (1825). *Homeria flexuosa* (L. f.) Sweet Hort. Brit. ed. 1, 395 (1827). *Moraea longifolia* Pers. Syn. 1: 49 (1805), pro parte. *Hexaglottis longifolia* Baker, Journ. Linn. Soc. 16: 100 (1877), Handbk. Irid. 76 (1892) and Fl. Cap. 6: 32 (1896), pro parte; Dur. & Schinz Consp. Fl. Afr. 5: 159 (1895), pro parte. *Homeria spicata* Klatt, Linnaea 34: 626 (1866), pro parte.

Corm 1·5—2·5 cm. diam.; tunics dark brown or blackish, occasionally with a neck 2—3 cm. long. *Stem* 20—70 cm. high, usually 30—50 cm., 2—3 mm. diam. at the base, firm, usually flexuose, with 1—6 suberect more or less flexuose branches. *Leaves* few, the 1—3 lower linear, 75—90 cm. long, 3—6 mm. wide, amplexicaul for 1—2·5 cm. at the base and above flat, conduplicate or involute, the lower surface striate, sometimes minutely papillose-ciliate near the base; upper leaves 4—8 cm. long, acuminate, often with a long setaceous cusp. *Inflorescence* of many sessile lateral 4—5-flowered cymes on the axis and branches, nearly always fairly closely spaced and more or less imbricate. *Spathes* 2·5—5 cm. long, the inner usually longer than the outer and slightly to well exserted. *Flowers* with a strong, unpleasant scent, golden-yellow, sometimes with 2 or 3 minute greenish-brown dots at the base of the blade, sometimes only on the outer lobes, the outer surface with a green medial line and one side of the outer lobes sometimes reddish-brown; *lobes* with claws 1·5—2 mm. long, connate for about 0·5 mm., the blade of the outer oblong, obtuse, 1·8—2·4 cm. long, 0·7—1 cm. wide, and the inner obovate-oblong, obtuse, 1·6—2·2 cm. long, 0·7—1 cm. wide near the apex. *Filaments* 5—6 mm. long, connate for about 1·5 mm.; *anthers* 5—7 mm. long. *Pedicel* 3—3·5 cm. long. *Ovary* cylindrical, 1—1·2 cm. long, exserted or half exserted from the spathes; *style* 1·5—2 mm. long, the branches 6—7 mm. long. *Capsule* cylindrical, sulcate, 1·5—2 cm. long, 2·5—3 mm. diam., exserted from spathes.

Usually grows in dry sunny places in hard gravel soil on flats, hills and lower slopes of mountains from Namaqualand to the Cape and from there eastwards to the George Division.

LECTOTYPE. Thunberg, *Moraea flexuosa* sheet b in Herb. Thunberg, Botanical Museum, Uppsala.

Flowering period. September—December.

NAMAQUALAND. Near Springbok, *Lewis* 743 (SAM); Klip Vlei, between Kamieskroon and Garies, *Thorne* (SAM No. 49973); between Brakdam and Rietkloof, *Pearson* 5664, partly (K).

VAN RHYNSDORP. Sandkraal, *Barker* 5665 (NBG); *Acocks* 14826 (PRE).

CLANWILLIAM. Near Clanwilliam, in rock crevices on hillside, *Galpin* (BOL); Clanwilliam, *Galpin* 376 (SAM).

PIKETBERG. N.E. margins of Verloren Vlei, in damp soil, *Pillans* 7803 (BOL); De Hoek, *Barker* 2558 (NBG); Porterville, *Loubser* 466 (NBG).

TULBAGH. Near the Berg River, *Thunberg* (UPS); near the Waterfall, *Ecklon & Zeyher* 29 (G, PRE); near Tulbagh, *Leighton* 1317 (BOL); Wolseley, *Barker* 2072 (NBG).

WORCESTER. Du Toits Kloof, *Stokoe* (SAM No. 60126).

PAARL. Berg River, near Paarl, *Drege* (K, P); *Barker* 8797 (NBG).

STELLENBOSCH. Stellenbosch Flats, *Garside* 66 (K).

MALMESBURY. Near Moorreesburg, *Bolus* (BOL); Mamre hills, *Compton* 9828 (NBG).

BELLVILLE. Sixteen miles N. of Cape Town on Malmesbury road, *Wasserfall* 768 (NBG).

CAPE. Between Cape Town and Table Mt., *Burchell* 34 (K); Table Mt., *Ecklon* 536 (G, K), 9 b (K); Bakoven, *Lewis* 971 (SAM); above Cannonball Bay, *Barker* 3240 (NBG); Flats near Rondebosch, *Burchell* 202 (K); Edinburgh Estate, Claremont, *Salter* 8788 (SAM); near Bishopscourt, *Salter* 9002 (BOL); Kirstenbosch, *Lewis* 672 (SAM); *Barker* 2609 (NBG); Rosebank, *Bolus* 3801 (BOL); behind Groot Schuur, *Dod* 360 (BOL, K); Royal Observatory grounds, *Davis* (SAM No. 61052); Noordhoek, *Barker* 2728 (BOL, NBG); Slangkop (Kommetjie), *Verreaux* (G).

CALEDON. Near Nieuwekloof, *Drege* 1533 (P); Rivierzondereinde, Appelskraal, *Ecklon & Zeyher* 31 (G); River Sonder End Mts., *Stokoe* (SAM No. 58335); between Dwarsberg and Somerset Sneeuwkop, Hottentots Holland Mts., *Stokoe* (SAM No. 58723); 8 miles from Stanford on road to Elim, *Gillett* 4506 (BOL); Genadendal, *Prior* (K).

BREDASDORP. Near Napier, *Leipoldt* 3551 (BOL).

SWELLENDAM. Storms Vlei Kloof, *Leipoldt* 3548, 3549—partly (BOL).

GEORGE. Great Brak River, *Young* (*Bolus* 5541, BOL); between George and Great Brak River, *Burchell* 6151 (K); near George, *Burchell* 6107 (K).

Without locality:—*Ecklon & Zeyher* 30 (G); *Zeyher* 1643 (K); *Mudd* (K); *Zeyher* 1644, partly (K); *Forster* (K).

Pillans 7803, from damp soil near Verloren Vlei, is considerably taller than usual, with 4 or 5 linear leaves, but this is probably due to the habitat.

The species is extremely variable with regard to the size of the plants and the degree of bend in the stem and branches, the width of the leaves and length of the spathes, and it is seldom found that specimens from two different localities are exactly alike. The plants usually favour open sunny places but may sometimes occur both in sun and partial shade in the same area, in which case it has been observed that the plants in semi-shade are taller, less branched and much less flexuose than those a few yards away in the open. It has also been noticed that plants in semi-shade, or kept indoors, have their flowers more exserted than usual. The plant figured by Ker in the *Botanical Magazine*, t. 695, represents a typical shade form of this species.

There are four sheets in Thunberg's Herbarium named by him *Moraea flexuosa*, but one sheet contains part of an inflorescence of *Hexaglottis longifolia* and specimens of genera other than *Hexaglottis* are mounted on some of them (for details about these specimens see the article by N. E. Brown on the South African Iridaceae in Thunberg's Herbarium, Journ. Linn. Soc. xlviii, p. 52 (1928)). The second sheet, b, has been selected as the lectotype of *Hexaglottis flexuosa* as it contains three specimens, all of this species, one of them complete with corm. A photograph of this sheet is reproduced here, Plate XXII.

N. E. Brown remarked that none of the specimens in Kew Herbarium matched Thunberg's type, and was of the opinion that some of them represented unnamed species, but after examining a number of living plants and a wide range of material from various herbaria I cannot agree with this view and have not been able to find any uniform characters which would enable me to separate varieties.

The flowers in this species open slightly later than in *H. longifolia*, from 3 to 3.30 p.m., and remain open until dusk, between 7 and 8 p.m.

3. **H. virgata** (Jacq.) Sweet Hort. Brit. ed 2, 498 (1830); Baker, Journ. Linn. Soc. 16: 100 (1877), Handbk. Irid. 76 (1892) and Fl. Cap. 6: 32 (1896), name and synonomy only; Dur. & Schinz Consp. Fl. Afr. 5:

159 (1895); Lewis in Adamson & Salter Fl. Cap. Pen. 225 (1950). *Moraea virgata* Jacq. Ic. t. 228 (1786–93), Coll. 3: 194 (1789); Ker, Bot. Mag. sub t. 1103 (1808) and Gen. Irid. 33 (1827); Spreng. Syst. 1: 164 (1825); Lam. Ill. 1: 115 (1791), Encyc. 4: 277 (1797); Pers. Syn. 1: 49 (1805). *Ixia virgata* Willd. Sp. Pl. 1: 202 (1798); Vahl Enum. 2: 59 (1806); Roem. & Schult. Syst. 1: 384 (1817). *Homeria virgata* Sweet Hort Brit. ed 1, 395 (1827). *Homeria spicata* Klatt, Linnaea 34: 626 (1866), pro parte. *Homeria flexuosa* Baker in Saund. Ref. Bot. 1, t. 24 (1869), non Sweet (1827). *Plantia flava* Herb. in Edwards's Bot. Reg. 30: Misc. p. 89 (1844).

Corm 1·5—3 cm. diam.; tunics very dark brown or blackish. *Stem* stiff and virgate, rarely somewhat flexuose, 20—85 cm. high (usually 30—50 cm.), 2—4 mm. diam. at the base, with 2—6 fairly long suberect virgate branches, sometimes shorter and simple or with 1—2 branches. *Leaves* occasionally 1 but usually 2—3 linear, 0·6—1·4 m. long, 3—5 mm. wide near the base, amplexicaul for 1—2 cm. at the base and above firmly involute and often appearing terete or sometimes flat or partly flat, striate beneath, more or less brown and dry at time of flowering; upper leaves 4—10 cm. long, appressed to the stem, long aristate. *Inflorescence* spike-like in appearance with numerous closely appressed sessile imbricate 2- or 3-flowered cymes on the axis and branches. *Spathes* usually dry and pallid at time of flowering, 2·5—4 cm. long, acute or acuminate, the outer sometimes aristate, equal in length or the inner slightly shorter or longer than the outer. *Flowers* yellow with a green medial vein on the lobes, scentless or with a faint unpleasant scent. *Perianth tube* 5—6 mm. long, cylindrical, not or scarcely expanded at the throat, sometimes included and sometimes partly exserted from the spathes; *lobes* very shortly unguiculate, oblong, obtuse, 5—7 mm. wide, the outer 1·6—2 cm. long, the inner 1·3—1·9 cm. long. *Filaments* 5 mm. long, connate for 1·5—2 mm.; anthers 6—7 mm. long. *Pedicel* 5 mm. long. *Ovary* cylindrical, 1·2 cm. long, included in spathes; *style* 1·5—2 mm. long, the branches 5 mm. long. *Capsule* included in spathes, cylindrical, pallid, about 1·5 cm. long, 3 mm. diam.

Usually occurs in hard gravel, clay or limestone soils on hills and lower slopes of mountains from the Worcester, Ceres, Paarl and Stellenbosch Divisions to the Cape and eastwards to Port Elizabeth.

TYPE. Jacquin Ic. t. 228.

Flowering period. November—January.

CERES. Leeuwfontein, Cold Bokkeveld, *Pearson* 3508 (K).

WORCESTER. Bains Kloof, *Schlechter* 9106 (BOL, G, K, PRE); Karoo Garden, Worcester, *Compton* 17849 (NBG); *Lewis* 5304 (NBG); near Breede River, 8 miles W. of Worcester, *Lewis* 5309 (NBG); Rawsonville, *Le Roux* (PRE No. 7813).

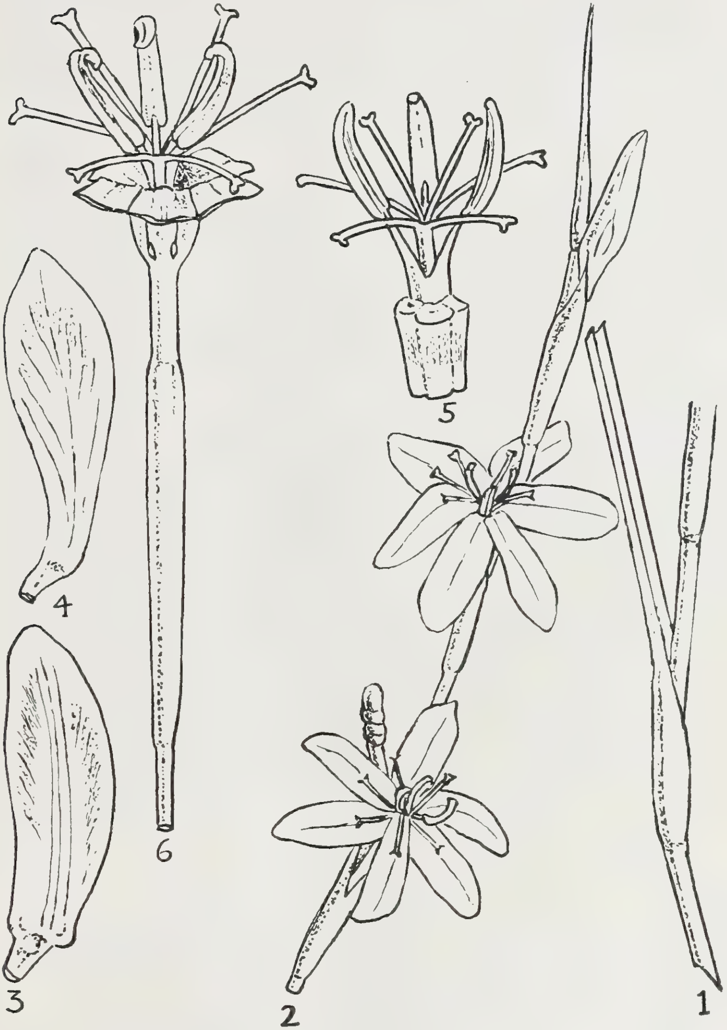

FIG. 3.—*H. virgata*. 1. Portion of lower part of stem and base of leaf. 2. Upper part of inflorescence. 3. Outer perianth lobe, approx. 2½ times nat. size. 4. Inner perianth lobe, approx. 2½ times nat. size. 5. Stamens, style and style branches, approx. 3 times nat. size. 6. Flower with part of perianth lobes removed, approx. 3 times nat. size. Copied from Saunders' Ref. Bot. 1, t. 24.

PAARL. Paarlberg, *Drege* (P).

STELLENBOSCH. Four miles from Faure on road to Stellenbosch, *Lewis* 2340 (SAM).

CAPE. Green Point, *MacGillivray* 479 (K); kloof between Lions Head and Table Mt., *Burchell* 252/1 (K); Signal Hill, *Marloth* 7234 (PRE); *Lewis* 665 (SAM); lower slopes of Table Mt., Mowbray, *Zinn* (SAM No. 54336); *O. Kuntze* (K); Royal Observatory grounds, *Davis* (SAM No. 61050); Kirstenbosch, N. of Window Stream, *Esterhuysen* 481 (NBG); near Bishopscourt, *Salter* 9001 (BOL); Wynberg Hill, *Salter* 8978 (NBG, SAM); Bergvliet, near Diep River, *Purcell* (SAM No. 16381); Westlake, lower mountain slopes, *Lewis* 1218 (SAM); Steenberg, *Compton* 16651 (NBG); Buffels Bay, *Salter* 328/14 (BOL).

SOMERSET WEST. Somerset West, *Parker* 4388 (BOL, K, NBG).

CALEDON. Elgin, *Lewis* 5317 (NBG); Onrust River, *Van Niekerk* 321 (BOL); Houw Hoek, *Penther* 572 (K).

BREDASDORP. The Poort, limestone hills, *Esterhuysen* 19580 (BOL); Napier, rhenoster hills, *Marloth* 10006 (PRE).

SWELLENDAM. Malagas, *Leipoldt* 3550 (BOL); Potteberg, *David* (NBG); Suurbrak, *Barker* 5029 (NBG); below Ten O'Clock Mt., in pasture, *Wurts* 486 (NBG); Storms Vlei Kloof, *Leipoldt* 3549, partly, (BOL).

HEIDELBERG. Grootvadersbosch, along paths in forest, *Willems* 88 (NBG).

RIVERSDALE. Limestone hills near Still Bay, *Esterhuysen* 19538 (BOL, PRE); Onverwacht, Albertinia, *Muir* 1207 (BOL).

MOSSEL BAY. Attaquas Kloof, *Barker* 7692 (NBG).

UNIONDALE. Joubertinia, *Esterhuysen* 6772 (BOL).

PORT ELIZABETH. Green Bushes, *Holland* 4051 (BOL).

Without locality:—*Zeyher* 1644, partly (K).

Salter 328/14, from Buffels Bay, is much smaller than usual, the plants 10—15 cm. high, with filiform leaves.

Var. **lata** Lewis var. nov.

A var. *virgata* segmentis perianthii latioribus et spatha interiore quam exteriore leviter longiore et partim exserta, distinguitur.

Perianthii tubus 5—7 mm. longus; segmenta exteriora oblonga, 2·2—2·5 cm. longa, 1 cm. lata; segmenta interiora obovato-oblonga, 2—2·2 cm. longa, apicem versus 0·9—1 cm. lata.

Differs from var. *virgata* in having much wider perianth lobes and the inner spathe slightly longer than the outer and partly exserted.

Perianth tube 5—7 mm. long; outer lobes oblong, 2·2—2·5 cm. long, 1 cm. wide; inner lobes obovate-oblong, 2—2·2 cm. long, 0·9—1 cm. wide near the apex.